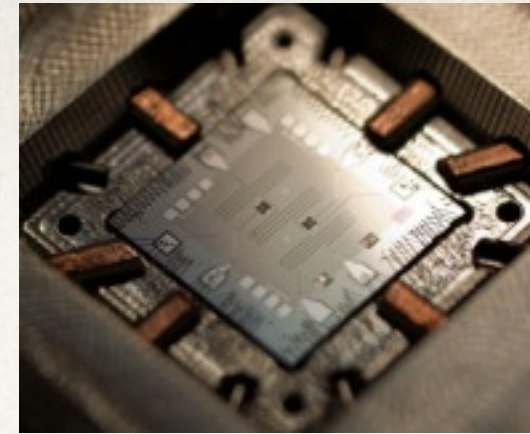


Computer architecture recreated on quantum device



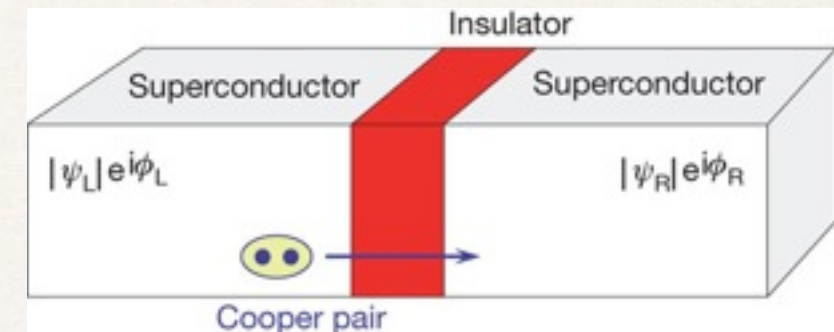
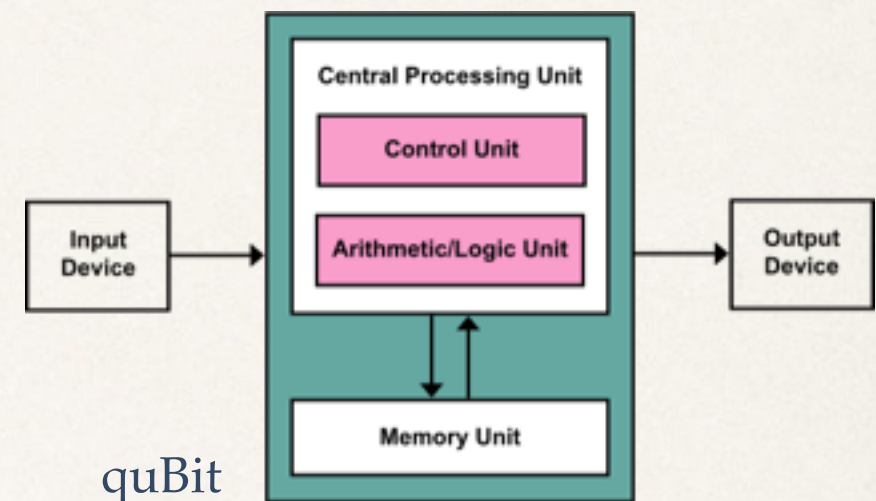
Based on superconducting circuits and integrated on a single chip physicists in California claim to be the first to implement a quantum version of the "Von Neumann" architecture in PC. Quantum CPU includes two superconducting "phase quantum bits" (quBits) connected by a superconducting microwave-resonator data bus. Each quBit is connected to its own quRAM element that conserves the quantum nature (entanglement) of the information it stores. To perform an operation, the qubits are being "detuned" from the other components. Microwave pulses are then applied, which loads the system with quantum information, before z-pulses are applied to exchange information. Quantum operations are performed by the careful application of specific sequences of pulses.

The advantages of Quantum Computing.

It has been shown in theory that a quantum computer will be able to perform any task that a classical computer can.

In order for a quantum computer to show its superiority it needs to use new algorithms which can exploit the phenomenon of quantum parallelism like quantum factorisation algorithm, whereas a classical computer would take, in some cases, more than the age of the universe to produce a result.

Von Neumann Architecture



The disadvantages of Quantum Computing

The coherent state, fundamental to a quantum computers operation, is destroyed as soon as it is measurably affected by its environment.